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ABSTRACT

A filtering system is provided for acquiring and processing signals using a sampled filter for signal separation and signal enhancement; such as for determining locations, distances, and times. Signature signals permit mixing and separation with sampled filters. A sampled filter, such as a digital correlator, is provided for generating high resolution output data in response to low resolution input data processed with low resolution computational circuits. A real-time time-domain correlator is provided with single-bit resolution computational elements to provide improved correlation filtering. A high speed real-time correlator is provided to enhance signals with compositing-after-correlation and with correlation using a plurality of correlation operators.